Mr. J. G. Goodchild are assisting in various departments. Communications should be addressed to the secretary at the Outlook Tower, Edinburgh.

A SUMMER meeting of university extension students will be held in Oxford in August, the first part being from August 1 to August 13, and the second from August 13 to August 24. The inaugural address will be delivered on Saturday, August 1, at 8.30 p.m., by the United States Ambassador. The programme of lectures is grouped in five sections, one of which is natural science. The list of lecturers includes the names of Dr. C. W. Kimmins, Mr. Michael Sadler, and Prof. Sims Woodhead. Conferences have been arranged on "The Education Act of 1902 and University Extension," chairman, Sir William Anson, M.P.; "Free Libraries and Popular Education," chairman, Lord Goschen, F.R.S.; and "Science in its Relation to Industry," chairman, Sir Philip Magnus.

THE President of the Board of Education has appointed Dr. H. F. Heath, Academic Registrar of the University of London, to the post of director of special inquiries and reports rendered vacant by Mr. Sadler's resignation on May 9. As the papers describing the circumstances which led Mr. Sadler to resign an office filled by him with such success since 1895, when it was created, have not yet been laid before Parliament, the appointment of a new director was unexpected, and will be received with surprise by the educational world. For eight years Mr. Sadler has been engaged in collecting materials for the study of educational systems and methods, and the information he has rendered available in his eleven volumes of special reports has been of the greatest assistance to students of educational science. But scientific method and thoroughness meet with little encouragement in this country, and though everyone seriously interested in education recognises the value of Mr. Sadler's work and understands its formative influence, it is evident that to the official mind the exigencies of the moment are of more consequence than scientific knowledge. It is to be hoped that the outcome of the affair will be to place the Special Inquiries Office on a firmer footing, and that the new director will be given increased facilities for the continued efficiency of the work carried on by Mr. Sadler.

THE programme of summer rambles for the present season, published in connection with the biology section of the Essex County Education Committee, and prepared by Mr. E. C. Horrell with the assistance of Mr. F. J. Chittenden, should prove very useful to teachers of nature-study. It is noteworthy that two distinct rambles in different parts of the county are arranged for each Saturday afternoon during June and July, so that a large number of teachers is given the opportunity of attending. Each ramble is conducted by a member of the biological staff. The excursions are intended to afford opportunities to teachers to gain experience in the methods adopted in the study of nature in the field. Any teacher is eligible who takes an interest in general natural history, and is prepared to devote a little leisure to its study. There is no fee, but teachers bear their own expenses. The advice given to intending ramblers is sensible and practical, as the following quotations show:—"Students must not needlessly uproot plants, tread upon crops, break through fences, or leave gates open." "The teacher should always bear in mind that most biological and morphological facts can be illustrated quite as satisfactorily by a common plant as by a rare one, and a plant should never be collected simply because it is rare." It would be difficult to devise a better plan to secure rational nature-study work in our schools than this way of first educating the teachers to become intelligent observers.

IN a letter to the *Times* of June 8, Mr. Sidney Lee draws an interesting and instructive comparison between American and British methods of appointing university professors. Of the superiority of the American plan there can be no doubt. In America, as soon as a vacancy arises in the professorial staff, the president of the university consults members of the faculty concerned. He invites their opinion as to who is the fittest man to fill the vacant chair. But the president does not confine his inquiries to his immediate circle of colleagues. Knowledge of the reputations that men are acquiring in academic work is wonderfully well diffused. The president who is seeking to fill a vacant chair has at command ready means of communication with presidents and professors of other universities. After due and thorough investigation, he forms his decision as to how the vacant post may be filled with greatest advantage to the institution over which he presides. He then forwards an invitation to the chosen person to occupy the vacant office. The procedure in vogue in this country is too well known to require description, and the only argument Mr. Lee has found in its favour is that it enlarges the electors' field of choice. "But," he remarks, "this argument is open to most serious question. Men of ordinary sensitiveness often refuse to submit themselves to the humiliating ordeal of public or semi-public competition for a vacant professorship, which in many respects reduces them to the level of advertising vendors of quack medicines. In effect the prevailing system often narrows the field of choice open to the electors, who are not in the habit of looking outside the panel of self-appointed candidates; it is, indeed, doubtful if honourable regard for the terms of their public advertisements permit them such a course of action."

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, April 30.—"Preliminary Note on the Use of Chloroform in the Preparation of Vaccine." By Alan B. **Green**, M.A., M.D. (Cantab). Communicated by W. H. Power, M.D., F.R.S.

Briefly stated, the method of preparing vaccine by the chloroform process is described as follows:—Vaccine emulsion is first prepared by triturating one part by weight of vaccine pulp with three parts by weight of water. Through this emulsion, air charged with chloroform vapour is passed, with the result that the water of the emulsion becomes saturated with chloroform (1 in 200). After such saturation all excess of chloroform immediately escapes automatically from the vaccine, and the lymph is not brought into contact with a stronger solution of chloroform than 1 in 200. The extraneous micro-organisms originally present in the lymph are by this means killed in from one to six hours, while the lymph remains fully potent for vaccination. Vaccinations have been performed with lymph prepared in this way with highly successful results.

By the chloroform process, lymph, free from extraneous micro-organisms, can be distributed for use twenty-four hours after collection from the calf, instead of after the lapse of a month or longer, which is the time generally necessary for the elimination of these organisms by the glycerine process. The rapid preparation of lymph by the chloroform process possesses many obvious advantages.

Zoological Society, May 12.—Dr. Henry Woodward, F.R.S., vice-president, in the chair.—Mr. W. B. **Tegetmeier** exhibited a skin and some illustrations of a species of pheasant from Mongolia recently described under the name of *Phasianus hagenbecki*. He suggested that it would make a handsome addition to our coverts.—Mr. Frank **Finn** spoke on variation in wild mammals and birds, and exhibited illustrative living specimens and drawings. The specimens included a frontlet of the barking-deer (*Cervulus muntjac*), bearing supernumerary antlers springing from the bony pedicles below the ordinary antlers; two abnormally-coloured Sambhar deer (*Cervus unicolor*); a goldfinch (*Carduelis carduelis*), showing red patches at the back of the head; and an albinistic variety of the ruff (*Pavoncella pugnax*), with head and neck nearly white.—Mr. F. E. **Beddard**, F.R.S., exhibited preserved and injected brains of mammals prepared in the Society's prosectorium.—Dr. J. F. **Gemmill** read a contribution to the study of double monstrosities in fishes. It contained an account of the anatomy of double monster trout-embryos, reference being made to the fusion, disappearance, or modification of organs which occurred at the region of transition from the double to the normal condition.—Mr. Robert **Gurney** dealt with the metamorphoses of the decapod crustaceans *Ægeon fasciatus*, Risso, and *Æ. trispinosus*, Hailstone. The larvæ of the two species were described, and comparisons made with those of other Crangonidæ, from which it was shown that the known larvæ of the British Crangonidæ fell naturally into three groups, representing the genera Ægeon (which would include Cheraphilus), Crangon, and Pontophilus.—Mr. C. Tate **Regan** read a paper on the fishes collected by Dr. Goeldi at Rio Janeiro. Four species were described as new.—Mr. Martin **Jacoby** described fifty-six new species of South American Coleoptera of the family Chrysomelidæ.

Geological Society, May 13.—Mr. E. T. Newton, F.R.S., vice-president, in the chair.—On some disturbances in the Chalk near Royston (Hertfordshire), by Mr. H. B. **Woodward**, F.R.S. The disturbed Chalk near Royston, with its fractured and displaced flints, occurs in conjunction with Boulder-clay, and the latter is found beneath a considerable thickness of disturbed Chalk. While Boulder-clay occurs along the high ground bounding the disturbed area to the south, the undulating downs to the north are devoid of this Glacial Drift. The facts were to be explained, on the land-ice theory, if the ice were at first welded to the rubbly surface-strata in regions north of the escarpment, and, when movement set in, there were overthrusts of débris-laden ice, and upper layers of ice were rent asunder from and moved over lower ones; while to the thrust or long-continued pressure of ice along shear-planes at the higher levels may be attributed the belt of disturbed strata.—On a section at Cowley, near Cheltenham, and its bearing upon the interpretation of the Bajocian denudation, by Mr. L. **Richardson**.—Description of a species of Heterastræa from the Lower Rhætic of Gloucestershire, by Mr. R. F. **Tomes**. The specimen was obtained from Lower Rhætic Beds at Deerhurst (Gloucester). It occurred a little above the bone-bed; it is specifically new and generically new to the Rhætic, and it displays Jurassic relationships. It differs from the several Liassic species in the small size of the corallum and of its calices.

Royal Meteorological Society, May 20.—Captain D Wilson-Barker, president, in the chair.—Mr. C. P. **Hooker** read a paper on the relation of the rainfall to the depth of water in a well. In this he gave the weekly measurements of the depth of water in a well (101 feet deep) and the amount of rainfall at Cirencester, extending over the sixteen years 1887–1902. The depth of water in the well depends on how much rain penetrates, and the penetration is determined by the amount of rain, the rapidity of its fall, and the existing condition of the soil. The winter rains penetrate easily, and the summer rains with difficulty. Mere absence of rain is not the only cause of scarcity, deficiency of spring rains, and subsequent heat and evaporation being far more important factors. After the early spring months but little rain penetrates to the well, so that a timely forewarning at that season might prove of great value by enabling the existing supplies to be husbanded at an early period. Considering how narrow is the boundary between sufficiency and want, and looking to the fact that every year sees further demands made on our water supplies, the author considers that it is of the utmost importance that more attention should be paid to the storage of our surplus winter rains. This might be done by the formation of large hill reservoirs, and doubtless such measures as the reafforesting of large tracts of land would be of use in checking the rapidity with which the rains reach the rivers and are so lost.—Mr. W. **Marriott** gave an account of the frost of April, which was so keenly felt coming after the long spell of very mild weather in February and March. The fortnight April 12–25 was marked by keen northerly winds, great dryness, and low temperatures. Frosts on the ground were of almost nightly occurrence, and as the result, the destruction of the fruit blossom has been very great and also very general. In many places a good deal of the apple and strawberry blossom, although only in bud at the time, was killed, while potatoes were cut to the ground, and the foliage of horse chestnuts and limes much injured, particularly on the windward side.

Royal Microscopical Society, May 20.—Dr. Hy. Woodward, F.R.S., in the chair.—Mr. C. L. **Curties** exhibited a new monochromatic light apparatus, which was a modification of that shown at the November meeting by Dr. Spitta. It consisted of an optical bench carrying a Nernst electric lamp, aplanatic bulls-eye condenser, adjustable slit, achromatic collimating lens, a prism upon which was mounted a Thorpe replica grating, and an achromatic projection lens, the whole being fitted upon a mahogany base capable of being tilted. The spectrum given was exceedingly brilliant, and any part could be brought into the field of the microscope.—Messrs. W. **Watson** and Sons exhibited a new form of museum microscope placed inside a locked glass case through which the eye-piece projected. There was a circular disc in place of the ordinary stage, upon which twelve slides could be fixed; it was rotated from the outside, so as to bring each object into the field. Messrs. Watson also exhibited a bulls-eye condenser of long focus for photomicrographic purposes, fitted with iris diaphragm and centring adjustments.—There was an exhibition of pond life by fellows of the Society and members of the Quekett Microscopical Club.—It was announced that at the next meeting on June 17 there would be a communication from Lord Rayleigh on Mr. Gordon's paper on the Helmholtz theory of the microscope, and that Dr. H. Siedentopf would give a demonstration of his method of making visible ultra-microscopic particles in glass, and the application of the method to bacteria.

Cambridge.

Philosophical Society, May 4.—Dr. Baker, president, in the chair.—On Mendelian heredity of three characters allelomorphic to each other, by Mr. W. **Bateson**, F.R.S. The object of this note was to direct attention to various possibilities attainable by a modification of the Mendelian method. In the ordinary method the constitution of the gametes in the first cross (F_1) is tested by breeding such individuals *inter se* or with a pure recessive. The ensuing generation (F_2) will consist of a mixture of dominant and recessive individuals; but if the proportions depart from the expected 3 : 1 or 1 : 1, it is not possible to tell whether such departure is due to change in relative numbers of dominant and recessive gametes, to imperfect segregation of characters, or to change in dominance. This question can in part be answered by a method which consists in crossing F_1 produced from a parent having one dominant character with another heterozygous individual having a different dominant character (the same recessive being used in both cases).—On the diathermancy of antimonite, by Mr. A. **Hutchinson**.—On the potential difference between the terminals of a vacuum tube, by Mr. W. A. D. **Rudge**. The experiments described in the paper were made in a tube which contained a perforated and movable metal disc. It was found that the presence of the disc caused the potential difference between the ends of the tube to rise considerably above that of a perfectly similar tube without a disc. The increase varied with the nature of the metal; using different metals as discs, the order of increase was Pb 1, Ag 1·25, (Cu Fe Zn) 1·35, Al 3·5, Mg 3·8.—The determination of curves satisfying given conditions, by Mr. H. **Bateman**.—On the existence of a radio-active gas in the Cambridge tap-water, by Prof. **Thomson**, F.R.S. (see p. 90).—On a continuous spectrum, by Mr. T. H. **Havelock**.—On the Thomson effect in alloys of bismuth and tin, by Mr. S. C. **Laws**. The quantity of heat evolved or absorbed in consequence of the temperature gradient when a current C passes between two sections of a homogeneous conductor the difference of temperature of which is δT may be represented by $C\sigma\delta T$. These experiments comprise some measurements of the quantity σ—the specific heat of electricity—in bismuth and alloys of bismuth and tin. Some values for σ obtained in this way are:—bismuth 860 ergs per absolute unit current per 1° C.; alloy containing 1·3 per cent. tin 10,700 ergs per absolute unit current per 1° C.; alloy containing 6 per cent. tin 11,200 ergs per absolute unit current per 1° C.—A preliminary account of an investigation of the effect of temperature on the ionisation of gases acted on by Röntgen rays, by Mr. R. K. **McClung**. This paper gives some of the results obtained in a series of experiments made to ascertain what effect the heating of a gas has on the amount of ionisation produced in it by the action of Röntgen rays. The results obtained show conclusively that the amount of ionisation is independent of the temperature of the gas when the density of the gas is kept constant. Observations were made on air for a range of temperatures of nearly two hundred degrees from about 9° C. to a little more than 200° C. Carbon dioxide was also examined for a slightly wider range of temperatures, and precisely the same result was obtained as for air.

Edinburgh.

Royal Society, May 5.—Prof. Geikie in the chair.—Mr. J. G. **Goodchild** read a paper dealing with (1) Scottish cairngorms, amethysts, and quartz, (2) chalcedony, opal and jasper, in which many interesting details were given of the valuable collection in the Museum of Science and Art. Important questions as to the genesis of these minerals and the influence of environment were indicated as calling for careful investigation.—Mr. J. G. **Goodchild** also read a paper on the phonetics of Gaelic, a subject to which he had devoted attention for many years. A specimen of Gaelic, which Prof. Mackinnon had put together as containing all the different sounds used in Gaelic, was transliterated in the phonetic alphabet known as palæotype, and each sound was then discussed, especially in relation to its mode of production. The author argued that many of the peculiarities of Gaelic sounds were due to the resonance in the vestibule or chamber immediately above the glottis.—Dr. A. T. **Masterman** gave a brief note on the heart and pericardium in Enteropneusta, Echinodermata and their allies, sketching what he believed to be the process of embryological development. One stage he had not, however, been able as yet to observe.—Prof. C. G. **Knott** communicated a further instalment of his investigations into the interrelations of the resistance and magnetisation of nickel at high temperatures. In the later experiments the temperature was pushed up to about 400° C. The increase of resistance of a particular wire when magnetised was found to increase as the temperature was raised, but afterwards greatly to decrease. This was to be expected if we suppose that the greatness of this effect in the magnetic metals is due to their magnetisation. At the highest temperature reached the percentage change of resistance in a moderate field was about one-sixtieth of the value at ordinary temperatures.

May 18.—The Hon. Lord M'Laren in the chair.—Dr. Alex. M. **M'Aldowie** read a paper on the human plantar reflexes. The lower limb in infants was a prehensile limb, and the reflex movement when the sole was tickled was similar to that in monkeys. As the child began to try to walk, the character of the reflex changed, and became ultimately plantigrade in type. The prehensile reflex, however, remained in abeyance, and manifested itself in disease. Under these conditions it appeared as soon as the cerebral control was withdrawn or overcome, and thus permitted the spinal control to reassert itself. It was a remarkable fact that such a reflex, which disappeared so early in the individual life, should reappear under pathological conditions. The author considered that this permanence of the prehensile reflex indicated that the period in the development of the ancestors of the human race when the lower limb was an organ of prehension was one of immense duration.—Sir William **Turner,** K.C.B., in a paper on the occurrence of the sperm whale or cachalot in the Shetland seas, described in detail the lower jaw, the teeth, and the tympano-petrous bones of a large specimen which had been found dead near Hillswick, Shetland, in August, 1901. The animal was a male, and was 61 feet long. The point of a massive explosive harpoon was found imbedded in the head, and had penetrated the great chamber for the lodgment of the spermaceti, most of which had consequently drained away. Of the sixty-four teeth obtained, forty-two were mandibular, seven were doubtful, probably mandibular, but had never cut the gum, and the remaining fifteen belonged to the upper jaw. They were of various shapes, straight and curved, and were obviously rudimentary and functionless. The paper contained a history of other occurrences of sperm whales in the Shetland seas, and closed with a comparative study of the tympano-petrous bones of Physeter, Kogia, and other Odontoceti.—In a preliminary note on the shedding of scales in gadoid fishes, Mr. Alex. Wallace **Brown** brought evidence in favour of the view that these fish shed their scales before spawning, and that this shedding ceases when the fish cease spawning. Should this fact be established by future investigation, the ordinary view that the rings on the scales indicate years of growth will have to be abandoned.

Paris.

Academy of Sciences, June 2.—M. Albert Gaudry in the chair.—On certain singularities of partial differential equations of the elliptic type, by M. Émile **Picard.**—On some new fossils from the Soudan, by M. A. **de Lapparent.** Further fossils found by Captain Gaden in the Soudan are undoubtedly Cretaceous in type. One of them, an ammonite, is related to the genus Mammites and also to Vascoceras. The sea must thus have extended as far as Tchad, and covered the Damerghou. It is nearly certain that during the Cretacean epoch it joined the Atlantic, and that the whole of Africa north of 13°–14° N. latitude was occupied by a vast sea, from which the high lands of Abyssinia and an island including Aïr, Tassali, Ahaggar and Tademaït emerged.—Astronomical and magnetic work at Madagascar, by M. P. **Colin.** A series of measurements of the magnetic elements showed a diminution in the declination at Tamarive of 11′ between May, 1902, and April, 1903, with a slight maximum in September; the inclination diminished 1′ 45″, and the horizontal component diminished by 0·00033.—On the infinitesimal properties of linear systems of circles, by M. **Mesuret.**—On the anisotropy of silk, and on the value of Poisson's ratio for this substance, by M. F. **Beaulard.** The results of the measurements given show clearly that silk is not isotropic.—On the magnetism of liquids and crystals, by M. Georges **Meslin.** No solid belonging to the cubical system exhibits the phenomenon of magnetic dichroism.—On the heat conductivity of iron in the magnetic field, by M. A. **Lafay.** The experiment of Maggi, which would appear to show that the heat conductivity of iron is affected in a magnetic field, is a convection phenomenon due to the air, and is not observed in a vacuum. There is some experimental ground for supposing that in a very intense magnetic field the conductivity of iron for heat is appreciably diminished, but the effects do not vary with variations in the direction of the magnetic and heat flux.—On the utilisation of energy for transmission in wireless telegraphy, by M. G. **Ferrié.**—On the radiations emitted by radio-active lead, by MM. **Korn** and **Strauss.** On comparing the photographic effect of equal quantities of radio-active lead, in the form of sulphate, one of which had been exposed to the influence of the kathode rays for ten minutes, it was found that the action on the photographic plate was much more intense in the case of the exposed sample. This effect could not be due to phosphorescence, since the photographic action was unaffected by interposing a thin plate of aluminium or black paper. No other radio-active material appears to show this effect, which is remarkable in that there is no corresponding increase in the electro-active power, the rate at which an electrified body is discharged remaining the same.—On the emanation of radium and its coefficient of diffusion in air, by MM. P. **Curie** and J. **Daune.** The view of Rutherford that the emanation of radium behaves as a gas is confirmed by a fresh experimental method. The fact that the emanation of radiation is condensed at the temperature of liquid air, first announced by Rutherford, is also confirmed.—On the purification of hydrogen on the industrial scale by cold, by M. Ch. **Renard.** Crude hydrogen passed at the rate of one to two litres per minute through a vessel containing liquid air is completely freed from hydrogen arsenide. The method may be practically useful in the purification of hydrogen for balloons.—On the cementation of steel, by M. Léon **Guillet.** The velocity of penetration of the steel by the carbon depends upon the temperature, the time, and the nature of the substance supplying the carbon. By simple cementation certain nickel steels acquire the same hardness as carbon steels, when the cementation of the latter has been followed by tempering.—The decarburation of steels and thin metallic plates by evaporation in a vacuum, by M. G. **Belloc.**—On the form assumed by mercuric iodide on separating from solution, by M. D. **Gernez.** When mercuric iodide is formed either by volatilisation or evaporation from solution at low temperatures, the unstable yellow form is produced.—Observations on the precipitation of manganese by persulphuric acid in acid solution, by M. H. **Baubigny.** A study of the effect of varying the volume of the solution in which the precipitation is carried out.—The alloys of copper and magnesium, by M. O. **Boudouard.** In a preceding paper the study of the fusibility curve indicated the existence of three definite combinations: Cu_2Mg, CuMg, and $CuMg_2$. In the present paper these results are confirmed by a metallographic study of the alloys.—On the silicides of chromium, by MM. P.

Lebeau and. J. **Figueras.** Four silicides have been isolated, corresponding to the compositions $SiCr_3$, $SiCr_2$, Si_2Cr_3 and Si_2Cr. Details of the preparation and properties of Si_2Cr_3 are given.—The electrolytic reduction of unsaturated acids, by M. C. **Marie.** By the use of mercury as a kathode, the unsaturated acids may be reduced to the corresponding saturated acids.—On dibromo-acetylene, CBr CBr, by M. P. **Lemoult.**—On *Pyronema confluens*, by M. P. H. **Dangeard.**—On the botanical characters of the mycelium of the truffle, by M. Louis **Matruchot.**—The morphological characters of Pleurocecidia, by M. C. **Houard.**—On some fossil algæ in ancient strata, by M. B. **Renault.** As the result of a microscopical examination of boghead cannels the conclusion is drawn that these were formed by the accumulation of gelatinous algæ at the bottoms of lakes, each layer of coal being recognisable by the genus of algæ producing it.—On the present state of the volcano of Mont Pelée, by M. **Giraud.**—On the geology of the neighbourhood of Cinglais (Calvados), by M. A. **Bigot.**—On the graphical characters of fatigue in voluntary movements in man, by MM. A. **Imbert** and J. **Gagnière.**—The degradation of carbohydrates in the animal organism, by MM. A. **Bach** and F. **Battelli.** The theory is put forward that two alternating actions are at work, both produced by enzymes. The carbohydrates are first hydrolysed, with production of carbon dioxide,. and then acted upon by an oxidising enzyme, with evolution of water. According to this view the carbon dioxide is never formed by direct oxidation, but by hydrolysis.

DIARY OF SOCIETIES.

THURSDAY, June 11.

Royal Society, at 4.—Election of Fellows.—At 4.30.—The Bending of Eletric Waves round a Conducting Obstacle; Amended Result: H. M. Macdonald, F.R S.—On the Propagation of Tremors over the Surface of an Elastic Solid: Prof. H. Lamb, F.R.S.—The Diffusion of Salts in Aqueous Solutions: J. C. Graham.—On the Structure of Gold Leaf, and the Absorption Spectrum of Gold: Prof. J. W. Mallet, F.R.S.—On Reptilian Remains from the Trias of Elgin: G. A. Boulenger, F.R.S.—A Method for the Investigation of Fossils by Serial Sections: Prof. W. J. Sollas, F.R.S.—An Account of the Devonian Fish, *Palaeospondylus Gunni*, Traquair: Prof. W. J. Sollas, F.R.S., and Miss I. B. J. Sollas.—The Measurements of Tissue Fluid in Man; Preliminary Note: Dr. G. Oliver.—Observations on the Physiology of the Cerebral Cortex of the Anthropoid Apes: Dr. A. S. F. Grunbaum and Prof. C. S. Sherrington, F.R.S.

Mathematical Society, at 5.30.—Quaternions: Major P. A. MacMahon.—Automorphic Functions and the General Theory of Algebraic Curves: Mr. H. W. Richmond —Jacobi's Construction for Quadric Surfaces: Prof. G. B. Mathews.—Addition to the Papers on Four Known Simple Groups of Order 25920: Prof. L. E. Dickson.

FRIDAY, June 12

Physical Society, at 5.—Some Experiments on Shadows in an Astigmatic Beam of Light: Prof. S. P. Thompson.—The Positive Ionisation produced by Hot Platinum in Air at Low Pressures: O. W. Richardson —On a Method of Determining the Viscosity of Pitch-like Solids: Prof. F. T. Trouton and E. S Andrews.

Royal Astronomical Society, at 5.—Eclipse of the Moon, 1903 April 11: F. W. Henkel.—Note on the Use of Peirce's Criterion for the Rejection of Doubtful Observations: S. A. Saunder.—On a Probable Relationship between the Solar Prominences and Corona: W. J. S. Lockyer.—Note on the Present Condition of the Lunar Theory: E. Nevill.—On the Relation between the Light Changes and Orbital Elements of a Close Binary System; with Special Reference to RR Centauri: A. W. Roberts.—Recent Observations of Mars and Jupiter: W. F. Denning.—The Spectra of Sun-spots in the Region B–D: Rev. A. L. Cortie.—Experiments as to the Actuality of the "Canals" observed on Mars: J. E. Evans and E. W. Maunder.—*Promised Papers*: Positions of 170 Stars around Nova Geminorum, and a Discussion concerning the Difference between two Exposures on the same Plate: F. A. Bellamy.—Examination of Mr. Whittaker's "Undulatory Explanation of Gravity" from the Physical Standpoint: G. Johnstone Stoney.—Observations of the Satellite of Neptune from Photographs taken with the 28-inch Refractor: Royal Observatory, Greenwich.—Mean Areas and Heliographic Latitudes of Sun-spots in the Year 1902, deduced from Photographs taken at the Royal Observatory, at Dehra Dun (India), and in Mauritius: Royal Observatory, Greenwich.

Malacological Society, at 8.—A List of Species of Mollusca from South Africa, forming an Appendix to G. B. Sowerby's "Marine Shells of South Africa": E. A. Smith.—On a New Genus, Planorbia, Moore, from the Albert Edward and Albert Nyanzas: J. E. S. Moore.—Notes on Some Jurassic Shells from Borneo, including a New Species of Trigonia: R. Bullen Newton.—Description of *Marginella lateritia*, n.sp., from the Andaman Islands: J. C. Melvill and E. R. Sykes.—New Mollusca from New Zealand: Rev. W. H. Webster.

MONDAY, June 15.

Victoria Institute, at 4.30.—Annual Meeting.—Address by Prof. W. M. Flinders Petrie.

TUESDAY, June 16.

Royal Statistical Society, at 5.

Zoological Society, at 8.30.—On an Extinct Species of Genet (*Genetta plesictoides*) from the Pleistocene of Cyprus: Miss Dorothy M. A. Bate.—Description of a New Fish of the Gobiid Genus Rhiacichthys from British New Guinea: G. A. Boulenger, F.R.S.—Descriptions of New Reptiles from British New Guinea: G. A. Boulenger, F.R.S.—The Marine Fauna of Zanzibar and British East Africa, from Collections made by Mr. Cyril Crossland in the Years 1901 and 1902—Polychæta, Part II.: Cyril Crossland.

Institution of Civil Engineers, at 9.—"James Forrest" Lecture, Some Unsolved Problems in Engineering: W. H. Maw.

WEDNESDAY, June 17.

Royal Microscopical Society, at 8.—On the Theory of Optical Images, with Special Reference to the Microscope: Lord Rayleigh, F.R.S.—On a Method of making Visible Ultra-microscopic Particles in Glass, and the Application of the Method to Bacteria: Dr. H. Siedentopf.—On the Lag in Microscopic Vision: E. M. Nelson.

Chemical Society, at 5.—(1) The Estimation of Arsenic in Fuel; (2) The Electrolytic Estimation of Minute Quantities of Arsenic, more Especially in Brewing Materials: T. E. Thorpe.—Crystallised Ammonium Sulphate and the Position of Ammonium in the Alkali Series: A. E. H. Tutton.—Action of Hydrogen on Sodium: A. Holt, jun.—(1) The Action of Halogens on Compounds containing the Carbonyl Group; (2) Reactions involving the Addition of Hydrogen Cyanide to Carbon Compounds: A. Lapworth.—The Acetoacetic Ester Synthesis: A. C. O. Hann and A. Lapworth.—Rimu Resin: T. H. Easterfield and B. C. Aston.—Note on the Karaka Fruit: T. H. Easterfield and B. C. Aston.

Institution of Civil Engineers, at 10 a.m.—Inaugural Address of the Engineering Conference: John Clarke Hawkshaw.

Royal Meteorological Society, at 4.30.—The Meteorological Aspects of the Storm of February 26–27, 1903: Dr. W. N. Shaw, F.R.S.—The Dines-Baxendell Anemograph and the Dial-pattern Non-oscillating Pressure-plate Anemometer: Joseph Baxendell.

THURSDAY, June 18.

Royal Society, at 4.30.—*Probable papers*: (1) Surface Flow in Crystalline Solids under Mechanical Disturbance: (2) The Effects of Heat and of Solvents on Thin Films of Metal: G. Beilby.—The Magnetic Expansion of some of the Less Magnetic Metals (with an Appendix by G. A. Schott): Dr. P. E. Shaw.—On the Discharge of Electricity from Hot Platinum: Dr. H. A. Wilson.—The Bionomics of *Convoluta Roscoffensis*, with Special Reference to its Green Cells: Dr. F. W. Gamble and F. Keeble.—New Investigations into the Reduction Phenomena of Animals and Plants: Preliminary Communication: Prof. J. B. Farmer, F.R.S., and J. E. S. Moore.—The Action of Choline, Neurine, Muscarine and Betaine upon Isolated Nerve (and upon the Excised Heart): Dr. A. D. Waller, F.R.S., and S. C. M. Sowton.—The Physiological Action of Betain Extracted from Raw Beet Sugar: Dr. A. D. Waller, F.R.S., and Dr. R. H. Aders Plimmer.—On the Physiological Action of the Poison of the Hydrophidæ; Part II. Action on the Circulatory, Respiratory and Nervous Systems: Dr. L. Rogers.—A Paper on the Spectra of Neon, Krypton and Xenon: E. C. C. Baly.—A Study of the Interaction of Mercury and Nitric Acid: Prof. P. Chandra Rây.—And other Papers.

Linnean Society, at 8.—Descriptions of New Chinese Plants: S. T. Dunn.—On the Life-history of a New Indian Species of Monophlebus: E. P. Stebbing.—On the Anatomy of Leaves of British Grasses: L. Lewton-Brain.—Scottish Freshwater Plankton.

FRIDAY, June 19.

Royal Institution, at 9.—Radium: Prof. Pierre Curie (in French).

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